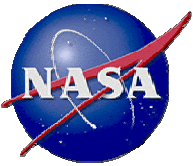




What do federal and DoD Organizations expect from companies who have adopted CMMI?

**John Kelly, Chuck Niles, & Pat Schuler
NASA**



NASA has adopted CMM/CMMI for its most critical software

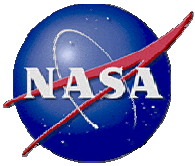
Requirement

2.5.1 “Consistent with the Requirements Mapping Matrix (Appendix D), the project shall ensure that software is developed by either a software CMM® Maturity Level 3 or higher organization; or by an organization that has a CMMI®-SE/SW Capability Level 2 or higher as measured by a Software Engineering Institute (SEI) authorized lead appraiser from an external organization in the following Process Areas: [SWE-032]

- a. Requirements Management
- b. Configuration Management
- c. Process and Product Quality Assurance
- d. Measurement and Analysis
- e. Project Planning
- f. Project Monitoring and Control
- g. Supplier Agreement Management.”

- NPR 7150.2, Software Engineering Requirements, September 2004

Applicable for Class A (full), Class B (full or alternative per note 3), Class C (per Center Defined Process) software. SWE-032 is not required for other software classes



NASA's internal use of CMM & CMMI Models

	Number of Pre-Appraisals	Number of Rated Appraisals (SCAMPI A or CMM Rated appraisals)
Software	25*	15*
Systems	11	-

* Note: Includes mostly CMMI appraisals. The three Centers who began with CMM appraisals are now transitioning to CMMI appraisals.



Expectation from organizations who have adopted CMMI*

- **Estimates are dependable** (schedule and cost) since the vendor has historic data for basis of estimates and are following repeatable processes
- **Risks are lower** than other providers because of their through coverage of risk management
- **Government information and data needs can be easily met** since much of it is already being collected (via CMMI)
- **Consistent use of acceptable processes** throughout the supply chain
 - Requirements, CM, project planning, project monitoring and control, etc.
- **Plans are kept consistent with requirements**

* Capability/Maturity level 3



Improving results through CMMI

- **Can Do:**
 - Providers have proven organizational capabilities and experience to deliver quality products and services on time, within budget, and meet requirements
- **Will Do:**
 - RFPs ask for proposals that include the implementation of proven management and engineering practices in the development of products
- **Did Do:**
 - Monitoring of provider's products, practices, and related measurement data



Future Expectations

- **The CMMI capability is indicative of processes that will be used**
 - Avoidance of “bait and switch” (bid one set of staff and CMMI Level and execute the contract when awarded with another set of staff and practices)
 - Capability rating reflects current practice
 - Less government FTEs needed to monitor processes with known characteristics
- **Quality is not sacrificed**
 - Eliminate the practice of delivering just to meet schedule, even if the product is not done
 - Usage of repeatable high quality processes that routinely yield quality products
 - End-to-end testing of deliverables to ensure fully integrated functionality of the delivered product
- **Improved Acquirer/Supplier communications**
 - Good insight into the progress of the development process and product
 - Smarter acquirer with better insight into key pieces of information and data
- **Lessen the impact of personnel changes**
 - Use of standard practices across an organization eases the impact of personnel changes during projects



Summary

- CMM/CMMI are now required for NASA's critical software
- CMM and CMMI have been useful benchmarks for internally evaluating software and systems engineering at NASA
 - NASA historic ratio: contracted out (80%) vs. internal engineering work (20%)
- NASA expects providers (internal and contracted out) to be able to successfully implement key processes which reduce risks
- There is room for improvement in the utilization of CMMI for Acquisition